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NEUMANN CLIP MICROPHONES AT THE FOLKBALTICA

One microphone for everything



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A visit to the festival in the Danish Alsion Sønderborg concert hall, where over 70 MCM KK 14 clip microphones were deployed for a traditional folk concert. Picking up the sound of strings, woodwinds, brass, grand piano, choir, electric guitars and drums, the mics underwent an extensive practical test. How did Neumann's first electret microphone perform – and what is a "nyckelharpa"?

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ounded as a folk festival for music with Nordic and Baltic influences, FolkBaltica has been held annually in spring since 2005. The festival places its musical focus on artists and culture from countries bordering on the Baltic Sea, welcoming both classical and folk music as well as jazz and singer/songwriters. The concerts are held in the border region of Germany and Denmark, with the German town Flensburg as the "pivot point".

With 34 concerts at 30 venues, the 2022 festival was larger than ever before and featured artists that – for the most part – are likely to be known mostly to insiders. The line-up included Milla's Nordic Lights, Lodestar Trio, Frigg, Vesselil and the better-known duo Gisbert zu Knyphausen & Kai Schumacher.

Opening concert by the youth ensemble with traditional folk music from the border region

The opening concert by the FolkBaltica Ensemble is an integral part of the festival's programme: the youth ensemble consists of musicians between the ages of 17 and 27 from the often intertwined German and Danish border region and aims at keeping the border region's traditional music alive. For organisational reasons, the opening concert used to take place in the middle of the festival. This year, however, it was moved to the beginning and - as is custom – took place twice: once in the Danish town of Sønderborg, a tranquil harbour town on the Alssund strait, and on the following day in Flensburg, which is about 40 kilometres away. Neumann and Sennheiser supported the production with microphones, using the event as a major practical test for the new Neumann MCM KK 14 electret clip microphone (see Production Partner 1/22). With this miniature system, the manufacturer has developed the first

clip microphone in its portfolio, designed for live use.

The location of the ensemble's concert in Sønderborg was the Alsion concert hall, a modern event complex near the city centre. The building is flooded with light via a glass façade, with Nordic-minimalist architecture prevailing at the same time. Its rear directly banks on the shore of the Alssund, inviting visitors to consciously decelerate. Within sight, the

King Christian X. Bridge, also steeped in history, opens regularly for the passage of passing sailing ships.

From an "test opportunity" to a large-scale use of clip mics

Martin Nørbæk is the concert hall's Technical Director and director of the foundation that owns the building. He had heard of the new Neumann clip microphone system and wanted to try out a couple of devices. Nørbæk contacted Jonas Næsby, the microphone manufacturer's Technical Application Engineer. While no mics were available for the event that was initially envisaged, the alternative turned out to be the opening event of the FolkBaltica festival. At the previous editions, a different technician had been in charge and the ensemble had mostly been equipped with overhead microphones, in small groups respectively. "I spoke with the ensemble," says Nørbæk. "Since I've been working here, I've equipped symphony orchestras with close-up mics several times and I liked the result. Harald Haugaard, FolkBaltica's



conductor and artistic director, was keen to go ahead with close-up miking." Nørbæk devised a channel plan for miking the more than 40 orchestra musicians plus guests as well as the approximately 70 choir singers. "It was still unclear how many microphones would be available." In the week prior to the concert, the manufacturer announced that they could provide enough devices for all instruments.

"I therefore organised a few microphones for the choir. Jonas was motivated though and said we might be able to get some more."

At the time, Neumann was "fine tuning" the system, the market launch was imminent. Further practical feedback was therefore desired. The concert was to take place on Friday, when the positive news came at the beginning of the week: "Everything worked out, we got 79 clip microphones for the concert!" Nørbæk recapitulates enthusiastically. All miked instruments as well as the choir were amplified using the new model. In the end, 72 devices were deployed on stage, plus a reserve as backup. Pure DI signals were used for the two acoustic guitars on stage, while, for practical reasons, conventional handhelds were provided to the performers only for solo singing and moderation. Four Sennheiser wireless systems were used here, each equipped with Neumann KK 205 microphone heads (equivalent to the KMS 105).

Extensive practical test of the Neumann MCM KK 14

The FolkBaltica opening concert therefore turned into an ideal practical test with various close-mic signals: violins, cellos, double bass, woodwinds, brass, choir, drums, piano,





Unusual use Bass drum miking was also possible due to the very wide frequency response in the low range

a concertina (a hand-pulled instrument similar to an accordion) as well as a Swedish folk instrument called nyckelharpa (also known as a keyed fiddle or key harp in English), a string instrument whose strings are mechanically shortened by keys, similar to a hurdy-gurdy.

Prior to their deployment at the FolkBaltica, the microphones had already been tested during productions throughout Europe, although mainly in the field of classical music, Jonas Næsby explained. It would therefore be exciting to listen to the microphones in folk-heavy music, for example on drums, in order to perceive the transient reproduction in context via the system.

Næsby was in charge of the opening concerts alongside his German colleague Volker Schmitt, Manager Technical Application Engineering at Sennheiser. This team constituted a link between the FOH, monitoring and performers, helping to fit the various adapters to the instruments and was available if any problems or concerns were to arise.

The idea for the microphone came up about six years ago and the development of the 12-millimetre electret capsule took years, Næsby explains. "Neumann's developers have successfully developed a capsule with particularly low inherent noise that can simultaneously handle a maximum sound pressure of 153 dB – all in a single model. That means that we can use it to pick up the quietest instruments and can also use it for a bass drum or snare drum." At the same time, the tonality was to do justice to the "Neumann heritage" – a natural sound image was desired that simultaneously conveys a pleasant warmth.



Tom pick-up As not all mounts were finished at the time of the concert, Sennheiser clips were used for mounting on the drums

Feed using transmitters - ideally without compromise

The use of an electret capsule instead of a true condenser microphone was necessary to enable feeding through wireless systems' body packs. However, within narrow tolerances, sound and directional characteristics were to remain the same, which had not been the case in the electret range so far. This, according to Jonas Næsby, was also the biggest challenge. "Due to the new capsule diameter, the development does not relate to existing technologies. It is also Neumann's first electret microphone." Production and design had been optimised accordingly in order to minimise the electret production tolerances mentioned. According to Neumann, every electret capsules sounds the same, which saves EQ adjustments and thus time.

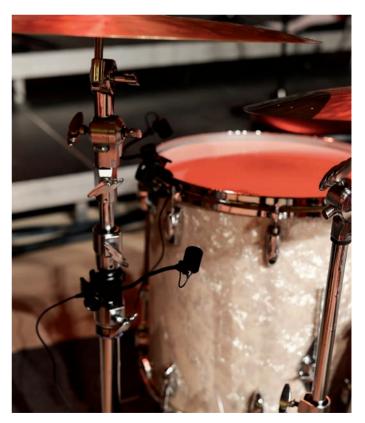
Another difference to conventional electret capsules: "The capsule element is replaceable," Næsby explains. The capsule basket is made of titanium. "I haven't tested it myself, but you should be able to step on it without damaging the capsule." The microphone is generally designed in such a way that it can be serviced – all other components are also easily replaceable, preventing users from having to buy a new microphone in case their current one has a fault. Neumann thus envisages a system that can be operated for decades, which puts its costs into perspective.

Nine different mounting clips

Neumann has developed nine different mounting clips for wind and string instruments as well as for drums, percussion and piano. For this early concert, a little improvisation was still necessary: for the drums, for example, the clips came from Sennheiser models, as the specialised Neumann

clips had not yet been manufactured. "Some of the woodwind instruments didn't have the right mounts because they weren't available yet, so we used normal stands here." The Neumann team placed great value on truly customised, versatile mounts. The boom clip, for example, is tensioned using a spring. "It has a certain tension so that it is held securely in place. At the same time, this ensures that the instrument is not damaged – which makes sense, especially when you think about what some violins are worth. It's understandable that owners of a very expensive violin are cautious when it comes to anything being attached to their instrument!" explains Volker Schmitt. Speaking of accessories: Interchangeable cables including 3.5 mm jack, mini-XLR 4-pin, Lemo as well as MicroDot are available for the system, allowing users to connect all common transmitter systems without further adapters. The microphone can also be used as a wired solution - as was the case at the FolkBaltica - with the matching MCM 100 amplifier, a plug-in connection and an XLR connector.

The microphones, including all accessories, will be available from summer 2022 onwards. According to Neumann,



Instead of using overheads, Nørbæk miked the two cymbals from below for optical reasons and thinned out the sound produced in the mids on the underside via EQ



Miking a guitar amp Even this worked well - according to monitor man Torben Gutzeit, precisely because the instrument acted rather like a musical "carpet"

the KK 14 capsule itself will be available for 279 euros. The instrument sets, which in addition to the capsule will include a gooseneck, cable, mounting system, XLR adapter and windscreen, will start at 629 euros (recommended retail price).

Plug-in connection to protect the instrument

The microphone is connected via a special connector. This connection is kept "open", it disconnects easily when tension is applied. The idea behind this feature: "If a musician forgets that a microphone is mounted on his or her violin, the plug will come loose when he or she moves away. There is a sound over the system, but the instrument is not ripped out of the musician's hands," says Jonas Næsby. What is an advantage for instrumentalists is an unacceptable risk for many technicians: "During the line check, every member of the technical crew came over and told us: the connection is not holding, it's not working for us! In the final product version, each gooseneck therefore comes with a slim but extremely sturdy plastic sleeve that fixes the clip securely to the microphone. At

FolkBaltica, however, pre-production units without the sleeve were used and the connections were therefore pragmatically secured with tape.

Cardioid as a suitable combination of directivity and timbre

Back to the capsule: What led to the decision for the directional pattern? "By using cardioid, you can get very close to the instrument and are still able to capture the timbre of the whole instrument, its natural timbre." At the same time, a good separation between the sources is still occurs. "Originally, we also experimented with more directional characteristics such as supercardioid – where the separation is naturally even greater. At the same time, however, you have to position the microphone further away from the instrument to capture a natural timbre. You gain nothing." He also mentioned the problem of susceptibility to wind noise: "In summer, when the microphones are deployed out-

doors, the following applies: the more directional the capsule, the more sensitive it is to wind. On an open-air stage, you don't want to have to use further windscreens if there's another way." The cardioid characteristic was therefore the appropriate solution during development. The microphone itself has a small foam attachment on the capsule to protect the capsule from simple air movements.

The drums were equipped with mics for toms, snare, bass drum, hihat and cymbals. For the bass drum, the microphone was positioned in front of the resonant head's cutout hole. By its very nature, the microphone cannot escape the physics of compressed air leakage. "Without the foam, wind noise would probably be audible via the microphone," says Næsby. With the normal protection, it works without a problem.

Concert hall with reduced reverberation

The concert hall and stage are clad in light wood panels and the venue sounds pleasantly supportive. It is a good compromise for a venue that on the one hand should be acoustically supportive and on the other hand allow for

>>> Crosstalk is reduced through tighter directivity, but you have to position the microphone further away to capture the

Jonas Næsby



damping, making it easy to work with the sound reinforcement, says Martin Nørbæk. "Normally, this is a concert hall for classical music, where the acoustics can be changed. It is currently damped to the maximum, to 1.6 seconds. This helps a lot in the high frequency range, but not in the low frequencies. As soon as 400 to 800 people enter, we have a large absorber," he says with a laugh. Reflectors are mounted on the ceiling to project unamplified classical music. "There are carpets in the walls, behind the wooden panels, that we can move up and down. This allows us to shorten the reverberation of 2.6 seconds by about one second. That helps. For rock, even less would be better, but it works very well for any kind of classical music."

Before the event, Nørbæk very much looked forward to the evening. As a console, he used an Allen & Heath dLive S7000 from the stock of sound reinforcement company Förde Show Concept in Flensburg. Nørbæk forewent the house console as he wanted to use the same console for both the Danish opening concert and the follow-up event in Flensburg.

Fast soundcheck – despite 72 "unknown" microphones

When asked about his first impression of the microphones, Nørbæk takes one of the "exotic instruments", the nyckelharpa, as an example. "We attached the microphone, pulled up the fader and were amazed – the result sounded very good straight away." The same was the case for all other instruments. "I usually work a lot with DPA, but the new Neumanns are something different for me: The sound is dynamic and natural, less harsh. The instrument's reproduction is very good and feature a tasteful, Neumann-typical warmth at the same time. It's very easy to work with this." Accordingly, the soundcheck was uncomplicated and quickly completed. "Everyone was set for a long day's work, with over 70 microphones that we hadn't heard before and with no preparation. But we were done surprisingly fast. There was nothing that got out of hand. I didn't have to bend the top end at all, only adjust individual signals a bit: a high cut and a low cut, gain, fader up, done."

A further area of application was the compact Fender electric guitar amp. The electret condenser microphone seems to be an unusual choice, as a small diaphragm condenser microphone with little colouring usually transmits the transients, impulses and treble components that occur directly in front of the loudspeaker diaphragm too directly in terms of sound aesthetics. "That's right, but it also worked very well here! Normally, I would use a Shure SM57, but I've also used large-diaphragm mics for years." For amplification of the live signal, he wanted to transport the energy. "I like the strumming of the guitar, otherwise the signal doesn't come through in the live mix and the definition



From the front, the visible microphone element on the instrument here on a violin during rehearsals – appears even more inconspicuous

is missing." The KK 14 microphone was also positioned at some distance to capture a little more of the speaker's overall impression.

He liked the way the clip microphones captured the drums, not least because of the fast transient reproduction. The only "downer", if you wanted to find one, was that the two reinforced cymbals sounded a little mid-range during the soundcheck. Was this because the pick-up was carried out from below? "Yes. When you pick-up the cymbals from below, you automatically have a focus in the mid-range, without the overtones of a normal overhead pick-up. But I think it looks better visually, especially in the classical context. I've hollowed out the midrange a bit to create a little more balance."

>> The musicians retain their freedom of movement, it doesn't look technical and 'tied up', as if they were standing in a forest of tripods and microphones. <<

Martin Nørbæk

The choir, about 70 young women, was picked up in small groups. According to Martin Nørbæk, an individual pick-up would have been contrary to the overall impression of the choir. Also: "Singing into a microphone individually is something the young choir singers are not used to. Partly, they sing with their songbooks in their hands." In general, it was important to Nørbæk that the musicians could still play off each other despite the microphones. "With the clip microphones, they retain their freedom of movement, it doesn't look technical and 'tied up', as if they were standing in a forest of tripods and microphones. For me, the visual impression is also very important. A lot of people who come to a concert hall - including the artists themselves react reserved as soon as they see a microphone and a tripod." At times, this is connected to the understanding of some purists that see classical music and amplification as two opposing worlds.

The most difficult signal source for Nørbæk was the bass drum, however this was not due to the microphone. "The room is very sensitive in the low frequencies – so I adjusted quite a lot regarding the bass drum's and double bass' bass range. I'm sure when there are 600 people in the room tonight, I can 'open up' the bass drum mic a bit again and take some of the EQ out."

Regarding the KK 14 capsule's directivity, he shared the assessment of cardioid as a suitable compromise: "You can connect the microphone and the result sounds good straight away. Other microphones with more specific directivity are more difficult - for example, a violin's signal that expresses an unpleasant resonance at a certain point is clearly emphasised. Originally, I had feared that due to the cardioid characteristic – compared to a supercardioid – too much crosstalk would come through from the neighbouring





instruments. I also wondered beforehand to what extent this would work with the wedges on stage, but it seems to work very well."

Orchestra monitoring

With regard to in-ears for classical musicians, as used for example at the "Symphonic Rock in Concert" event held at the new philharmonic hall in Frankfurt's Jahrhunderthalle (see Production Partner issue 1/22), this was not an option for the FolkBaltica ensemble. "The orchestra was to be able to play off each other as they had done before," he says. "It is very important to keep the level on stage as low as possible so that the musicians can hear each other and interact directly. As this is a very large stage – 20 metres wide – the musicians need a little more definition of the instruments coming from the opposite side of the stage. That's what the

monitors do. For my taste, that wouldn't work at all with inears. If traditional folk or classical music were to be performed with in-ears, the best choice would be very ambient in-ears positioned at the very edge of the musicians' ears. Otherwise, the impression would be far too 'closed' – classical musicians and also folk people need each other."

How does Nørbæk generally describe his mixing approach? "I actually only mix jazz, folk and classical music, and try to make the result sound as natural as possible. All sources should be transported in a defined way." He uses virtually no compression on the individual signals, but compresses groups instead. "For example, I mix the first violins, the second violins and the cellos. These are connected to multiband compressors, that only dampen the strong peaks a bit so that I can create a louder mix with the groups. On the master, I also have a multiband compressor that does a

little bit of work for me."

Service provider Förde Show Concept's crew is part of the company's event technology division, and the staff acted in a bright and unagitated manner, which also contributed to the calmness on stage. Monitoring was handled by Torben Gutzeit using Allen & Heath dLive S3000 console. Gutzeit controlled the microphones' input gain and forwarded the signals to the FOH console via Dante. "I didn't know beforehand if the console would pro-





One of Volker Schmitt's personal highlights was the clear, immediate and at the same time pleasant sound of the double bass via the sound system; the microphone was located just above the bridge

vide stable phantom power for 80 channels. We therefore split the supply, via a dLive DM mix rack and a GX expander, so, at least, the supply is handled by two power supplies."

His experience with the new KK 14 at the monitor desk practically coincided with Martin Nørbæk's FOH impression: "It was very exciting because I had to do practically nothing to the microphone signal: I set a low cut, pushed the fader up and the signal was there as it should be. It didn't interfere in the high range and was very precise in the low range, especially in the low-mid range, which the microphone presents excellently in the case of a cello or double bass." To Gutzeit, the mics' somewhat more tolerant directional characteristic, which does not require a "single" exact setting, is equally advantageous. "We connected 20 violins in ten minutes. In a situation such as this, you don't always pay attention that the position is one hundred percent perfect. It might be one degree more, one degree less - nevertheless, the violin is there." In addition, the handling by the musicians can sometimes shift the microphone's position a little. "It's a rock'n'roll operation – these things happen, and the KK14 microphone is very gracious in this respect."

How does Gutzeit see the issue of crosstalk due to the cardioid characteristic with regard to monitoring? "The microphone picks up a lot on stage. At the very front on the right-hand side, we have the concertina, which is very quiet quite a lot of noise coming from the stage is added here." The instrument is picked up from the side, pointing towards the stage. "We could of course try turning the miking, but this would result in reverberation from the hall as crosstalk." For Gutzeit, too, bass and bass drum were the signals that required the most notable interference. "In comparison to other clip microphones, this mic picks up very low, so I have to clip that really hard." Conversely, the consistently transported base leads to concrete advantages for the double bass. "The musicians wanted to hear a bit of low end. My low cut here is at 80 Hz, allowing something to happen in this range." For the

non-bass-heavy sources, he applied a low cut at 100 Hz for monitoring.

"Neutral" bass foundation

When it comes to the drum kit: How does the result of miking with the electret capsules sound to him, for example on the bass drum, where the "usual" candidates such as the Shure Beta 52, the Beta 91 interface or the Electro-Voice N/D 868 are each "pre-formed" to the miked bass drum sound? "Naturally, the Neumann makes the midrange around 1 kHz more present than other microphones that are designed specifically for bass drums. If I'm honest, I turn it into what I typically want to hear with a bass drum: 200 Hz out, a little attack at the top, then it sounds like a bass drum to me. Nevertheless, the microphone leaves me with options." As expected, he got a bit more carpet signal with the electret condenser capsule on the snare than with a

Shure SM57, says Gutzeit. Overall, he also liked the natural sound character: "Even with the electric guitar amp, it does what the amp does at that point. Here too, the microphone is 'flat', you can bend it in any direction you like." Sure, it may not have delivered the SM57's midrange punch and high-mid presence from scratch, but he was able to work with the signal very well. "Additionally, the electric guitar is the rhythm section here and provides a 'carpet'." For high-gain applications, the question arises whether the loudspeaker's sound aesthetics in combination with the compact condenser microphone deliver the desired result.



On the cellos, the KK 14 microphones also "disappeared" in the visual impression; here during the rehearsals following the soundcheck, positioned between the F-hole and the bridge

Gain-before-feedback despite sidefills close to the choir

Gutzeit confirms the microphone's high signal-to-noise ratio. "With just under 80 open channels on stage, it's practically silent – both in terms of the microphones' noise floor

Picking up a concertina from the side pointing towards the stage – due to the particularly quiet instrument and the required amplification, the microphone picked up more stage components here

and the gain-before-feedback level. It works well even for the choir, which can hear itself via sidefills - a rather unthankful solution, especially with the cardioid. Here, the mass is critical, with 20 open mics, sometimes located only half a metre away from the loudspeaker." However, he did not have to drive them so loudly that the situation would have become critical.

Were there any other "challenges"? "At first, the level for the cello and the double bass was low; the microphone is located relatively close to the monitor. But I had expected that. The piano was also missing some level, but that's completely 'safe'." At first, monitor man Gutzeit suspected this was due to the two microphones, as the piano level seemed unusually low. But the problem turned out to be at the source: the instrument was simply very quiet – also because the lid had been removed, explains Volker Schmitt.

Accessories details lead to suggestions for improvement following the "prototype use"

In general, everything worked very well, Torben Gutzeit recapitulated after the soundcheck with this first wave of product samples. "Of course, little things stand out when you have the setup in your hand for the first time. At one point, we had problems with the belt clip, which is practically just clipped on. It fell off a couple of microphones." According to



Volker Schmitt, the spring's tension had decreased after several uses. This is not acceptable and will be changed, assures Schmitt.

How did Torben Gutzeit assess the test opportunity of having a uniform type of microphone on stage? "Apart from personal preferences, only the instruments make a sound – everything else is the same." He recalls the description in Production Partner, according to which one could think of the microphone as "a small version of the KM184" – an assessment, he can agree with.

In his view, how would he assess the market for this microphone? "In the professional class, there is no system that really offers the wealth of accessories for the breadth of instruments." The first interested parties approached him that same afternoon: Following the soundcheck, a violinist with microphone experience appeared in the backstage area, was taken with the microphone's "airier" sound and asked about the price.

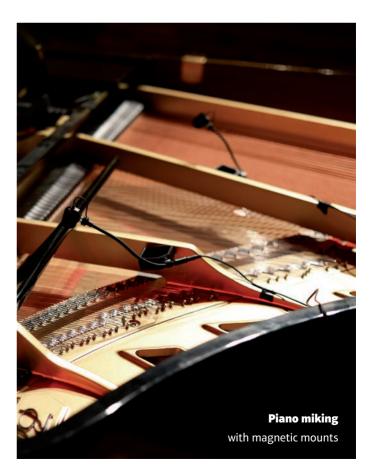
More power

In the evening, around 700 visitors attended the event. The ensemble impressed with its enthusiasm and performed seemingly effortlessly to the point. The young musicians were literally bursting with energy. The already impressive tightness during the soundcheck was increased even more during the concert, the orchestra presented itself as a ho-

mogeneous sound unit, intonating precisely and with harmonically complex timbres. The lively result was immediately infectious, the audience was enthusiastic.

The ensemble's repertoire ranged from traditional Baltic music and a new pop composition that a vocal duo had written especially for the festival to a minimalist orchestral arrangement of the old folk song "Die Gedanken sind frei" (Thoughts are Free), in which a violinist and a trumpeter act as two singers. The Baltic pieces sounded unpretentious and catchy, while the atmosphere was reminiscent

of Irish folk. In between, a Norwegian dancer – this year's so-called festival "house artist" – performed on stage with







The choir was miked in small groups; for this purpose, the KK 14 microphones were attached to tripods

the ensemble. After an intermission, the choir performed a quiet a-cappella piece. Together with a Scottish guest violinist, the orchestra played Scottish traditionals, defying the supposed classical label.

The uninhibited enthusiasm with which the musicians performed, coupled with appropriate discipline, unfolded a compelling allure even for listeners unfamiliar with the genre, with more power than many a meagre rock'n'roll show. Martin Nørbæk's live sound seemed natural: in the quiet passages it felt almost as if there were no microphones in use; in louder sections, the sound aesthetic was powerfully supported and felt close to "rock level". The microphones did their work practically "invisibly" for the audience, both visually and sonically.

The production was enthusiastic and the audience was treated to a successful concert experience. In the evening, Jonas Næsby and Volker Schmitt packed up their bags for the upcoming gig in Flensburg, exhausted and happy.

